

Appl. S.N. 09/682,157  
 Arndt. Dated April 16, 2005  
 Reply to Office Action of Feb. 16, 2005

RD-28,738

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A method for generating transfer functions for use in volume rendering of three-dimensional data of an object volume, the method comprising:

obtaining the three-dimensional data of the object volume;

evaluating selected characteristics for a plurality of samples of the three-dimensional data; and,

computing a transfer function range for volume rendering the three-dimensional data based on the selected characteristics, wherein the computing of a transfer function range is performed according to:

$$TF(x) = \begin{cases} A & x \leq LL \\ \frac{B - A}{UL - LL} x + c & LL < x < UL \\ B & x \geq UL \end{cases}$$

$x \leq LL$

$LL < x < UL$

$x \geq UL$

where TF(x) is the transfer function, x is a voxel intensity value, A and B are opacity values and C is the y-intercept with an opacity y-axis, and further where LL is a lower limit of the transfer function range and UL is an upper limit of the transfer function range and wherein the lower limit and the upper limit are computed according to:

Lower Limit = LL =  $\mu - N \times \sigma$ , and

Upper Limit = UL =  $\mu + N \times \sigma$

where  $\mu$ ,  $\sigma$ ,  $N$  are the mean, the standard deviation, and the number of standard deviations respectively.

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2. (original) The method of claim 1 wherein the three-dimensional data is subject to noise and low contrast.

3. (original) The method of claim 1 wherein the three-dimensional data is acquired by at least one of computed tomography (CT), magnetic resonance (MR), ultrasound, and three-dimensional digital x-ray mammography (3DDM).

4. (original) The method of claim 1 wherein the selected characteristics are mean and standard deviation.

Claims 5-6 (canceled)

7. (currently amended) A method for generating transfer functions for use in volume rendering of a three-dimensional data set of an object volume, the method comprising:

obtaining the three-dimensional data set of the object volume;

sampling the three-dimensional data set to generate a plurality of samples of the object volume;

measuring the mean and standard deviation for the plurality of samples;

generating a transfer function range based on the measuring of the mean and standard deviation for the samples, the transfer function being used for volume rendering the three-dimensional data, wherein the transfer function range comprises an upper limit and a lower limit and wherein the upper limit is UL and the lower limit is LL, and wherein UL and LL are computed according to:

$$\text{Lower Limit} = LL = \mu - N \times \sigma, \text{ and}$$

$$\text{Upper Limit} = UL = \mu + N \times \sigma$$

where  $\mu$ ,  $\sigma$ ,  $N$  are the mean, the standard deviation, and the number of standard deviations respectively.

Claims 8-9 (canceled)

10. (original) The method of claim 7 wherein the three-dimensional data set is subject to noise and low contrast.

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11. (original) The method of claim 7 wherein the three-dimensional data set is acquired by at least one of computed tomography (CT), magnetic resonance (MR) and three-dimensional digital x-ray mammography (3DDM).

Claims 12-15 (canceled)